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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/955,061	09/19/2001	Soon-kyo Hong	1349.1028	8477

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EXAMINER

KIM, PAUL D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/955,061

Applicant(s)

HONG ET AL.

Examiner

Paul D Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 5-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This office action is a response to the amendment filed on 4/19/2004.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Misso et al. (US PAT. 6,424,488) in view of Scuricini (US PAT. 4,096,988), and further in view of Bernstein et al. (US PAT. 6,501,045).

As per claims 1 and 14 Misso et al. teach an apparatus of a disc stack balancing comprising: a disc assembly (100) having a driving source, wherein the disc (108) is rotatably disposed at the driving source (146) as shown in Fig. 2; a displacement measurement unit (Step 156) measuring vibration in the rotation of the disc assembly; and a laser cutter to remove a portion of the corresponding disc to archive proper balance as shown in Fig. 4 (see also col. 3, lines 26-52). Misso et al. also teach a disk stack (equivalent with a plurality of discs, as per claims 15 and 16) disposed on the driving source and removed a portion of the corresponding disc.

However, Misso et al. do not teach a phase angle measurement unit measuring a phase angle from a reference point of the disc assembly in the rotation of the disc assembly and an operation/control unit calculating an eccentric mass and an eccentric

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position of the disc assembly, by using the biased vibration measured in the displacement measurement unit and the phase angle measured in the phase angle measurement unit. Scuricini teaches an apparatus for the dynamic balancing of rotating bodies comprising a disc assembly (14) having a driving source (1) as shown in Figs. 2 and 3; a displacement measurement unit (4, 15 as shown in Fig. 3) for measuring vibration in the rotation of the disc assembly; a phase angle measurement unit (18, signal generator, as shown in Fig. 3) measuring an angular position of the rotating body; an operation/control unit (8) collecting data from the displacement measurement unit and phase angle measurement unit; and a laser cutter (12) for removing a certain amount of the material from the mass eccentricity analyzed by the operation/control unit (see also col. 5, line 39 to col. 6, line 35). Scuricini also teaches that the vibration is caused by the mass eccentricity and removed the certain amount of the material from the mass eccentricity at the positions specifically disclosed in lines 39-54 of col. 5. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the apparatus for balancing a disc stack of Misso et al. by a phase angle measurement unit and an operation/control unit as taught by Scuricini in order to achieve proper balance of the disc stack.

Also, Misso et al., modified by Scuricini, do not teach the laser moving to track and cut the portion of the corresponding disc while the disc is not rotating. Bernstein et al. teach an apparatus for moving a laser beam relative to a work piece to machine the workpiece of the mechanical features to achieve a desired profile (see also, col. 1, line 66 to col. 2, line 5). Therefore, it would also have been obvious at the time the invention

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was made to a person having ordinary skill in the art to modify the apparatus for balancing a disc stack of Misso et al., modified by Scuricini, by the laser moving to track and cut the portion of the corresponding disc as taught by Bernstein et al. in order to machine the workpiece of the mechanical features to archive a desired profile.

As per claim 2 Misso et al. teach a vacuum port is desirable to remove particles during the trimming operation.

As per claim 3 the dust collecting apparatus and laser cutter of Misso et al. is capable of unmanned operation to optimize and reducing errors for removing the portion of the corresponding disc.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Misso et al., modified by Scuricini and Bernstein et al., and further in view of Duston et al. (US PAT. 3,538,298).

Misso et al., modified by Scuricini and Bernstein et al., teach all of the limitation as set forth above except a photo sensor as the phase angle measurement unit by irradiating light to the reference point and receiving a reflection light form the disc assembly. Duston et al. teach a process of disc balancing rotating objects including a stroboscopic light device to illuminate one or more sequentially numbered bands circumscribing one or both ends of the rotating objects and indicating a location (reference point) of the eccentric mass and removing the eccentric mass by laser to provide proper balance for rotary motion as shown in Fig. 2 (see also. Col. 1, lines 25-54). Therefore, it would also have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the phase angle measurement unit of

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Misso et al., modified by Scuricini and Bernstein et al., by stroboscopic light device as taught by Duston et al. in order to indicate the eccentric mass and remove to provide proper balance for rotary motion.

Response to Arguments

4. Applicant's arguments with respect to claims 1-4 and 14-16 have been considered but are moot in view of the new ground of rejection. Rejections are based on the newly cited reference.

5. This application contains claims 5-13 drawn to an invention nonelected with traverse in the reply filed on Paper No. 4. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul D Kim whose telephone number is 703-308-8356. The examiner can normally be reached on Tuesday-Friday between 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

pdk



A. DEXTER TUGBANG
PRIMARY EXAMINER